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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/724,882	12/02/2003	Yoshihiro Uetani	Q78640	1657
65565	7590	06/04/2007		
SUGHRUE-265550			EXAMINER	
2100 PENNSYLVANIA AVE. NW			DESAI, ANISH P	
WASHINGTON, DC 20037-3213				
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	Application No. 10/724,882	Applicant(s) UETANI ET AL.	
	Examiner Anish Desai	Art Unit 1771	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 27 February 2007.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) 10-12 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-9 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

### **DETAILED ACTION**

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed on 02/27/07 after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 02/27/07 has been entered.
2. The art rejections that are not maintained are withdrawn.
3. A new ground of rejection is made over Nakagawa et al. (WO 01/75991). US 2003/0064282A1 to Nakagawa et al. is relied upon as an equivalent document for convenience.
4. A new obviousness type double patenting rejection is made.

### ***Specification***

5. The disclosure is objected to because of the following informalities: page 6, line 19 of the specification recites, "Examples of the 2-oxetanyl" should be changed to "Examples of the 3-oxetanyl". Appropriate correction is required.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 1, 2, and 9 are rejected under 35 U.S.C. 102(b) as being anticipated by Nakagawa et al. (WO/01/75991). US 2003/0064282A1 to Nakagawa et al. is relied upon as an equivalent document for convenience.

Regarding claims 1 and 2, Nakagawa teaches a separator for battery prepared by impregnating or coating a porous material (porous film/membrane) with a monomer solution comprising crosslinkable monomer (0071) such as at least one of monomer having unsaturated bond, monomer having epoxy group and monomer having isocyanate group as crosslinkable monomer (0025). With respect to claim 9, Nakagawa teaches that the thickness of the porous material (porous film/membrane) is not greater than 30  $\mu\text{m}$  (0069) and the porous material has porosity of 50% (0106). Accordingly, Nakagawa anticipates the claimed subject matter.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 1-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yuji et al. (JP 2002-110245-machine translation previously provided by the Examiner) in view of Nakagawa et al. (WO01/75991). US 2003/0064282A1 to Nakagawa et al. is relied upon as an equivalent document for convenience.

Regarding claim 1, Yuji et al. teach a lithium ion secondary battery, which uses a solid polymer electrolyte (abstract, page 6) and a liquid crosslinkable composition for the solid electrolyte (0001). The liquid crosslinkable composition for the solid electrolytes of Yuji et al. comprises radically polymerizable monomers of oxetane ring containing monomer and epoxy group containing monomer (0011). Moreover Yuji et al. teaches a battery separator (0004). Additionally, Yuji et al. teaches that the liquid crosslinkable composition containing oxetane group and epoxy group is injected into the airtight container, which has units such as electrodes and separator (0020). The liquid composition infiltrates into gaps such as electrode and a separator (0020).

With respect to claim 1, it is noted that the reference of Yuji discloses same crosslinking polymer containing cation-polymerizable functional group selected from the group consisting of 3-oetanyl group and epoxy as claimed by Applicant. The difference between the invention of Yuji and the presently claimed invention is that Yuji does not

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explicitly teach of coating of aforementioned crosslinking polymer composition onto a porous film substrate. Instead, Yuji discloses injecting aforementioned crosslinking polymer into the airtight container (i.e. battery), which has units such as electrodes and battery separator. However, Nakagawa teaches that as a method for inhibiting liquid electrolyte leakage there is known a method, which comprises incorporating a crosslinkable monomer in a liquid electrolyte, subjecting the liquid electrolyte to crosslinking reaction to produce a jelly solidified gel electrolyte, and then using the solid electrolyte comprising a solidified liquid electrolyte singly or in combination with a substrate as a separator (0004). According to Nakagawa such method has disadvantage because in the case of such a gel electrolyte, ions move through the gel at a very low rate than in the liquid electrolyte, easily causing an increase of internal resistivity of battery and drop of high rate discharge capacity. The resulting battery shows insufficient battery properties (0005). To overcome these disadvantages Nakagawa teaches a separator for battery prepared by impregnating or coating a porous material (porous film/membrane) with a monomer solution comprising crosslinkable monomer (0071). Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to use the porous film of Nakagawa as a battery separator in the invention of Yuji and form a polymer layer on the porous film as taught by Nakagawa, motivated by the desire to avoid increase of internal resistivity of a battery and drop of high rate discharge capacity.

Regarding claim 2, the oxetane ring containing monomer of Yuji et al. contains 3-oxetanyl group (0013).

With respect to claim 3, the liquid crosslinkable composition contains the other radically polymerizable monomer (claim 2).

Regarding claim 4, Yuji et al. teach that the quantity of the radically polymerizable monomer with oxetane ring and another radically polymerizable monomer is 5 to 50% by weight (claims 2 and 3).

With respect to claim 5, Yuji et al. disclose that the quantity of the radically polymerizable monomer having epoxy group and the other radically polymerizable monomer is 5 to 50% by weight (claims 4 and 5).

Regarding claims 6 and 7, Yuji et al. teach the claimed 3-oxetanyl group containing (meth) acrylate formula (I) on page 25 and claimed epoxy group containing (meth) acrylate formula (II) on pages 26 and 27 respectively.

Regarding claim 8, Yuji et al. teach the claimed formula III and IV on pages 27 and 28.

Regarding claim 9, Yuji is silent as to teaching of porous film substrate having a thickness of 3 to 50  $\mu\text{m}$  and a porosity of 30 to 95%. The invention of Nakagawa is previously disclosed. Nakagawa teaches that the thickness of the porous material (porous film/membrane) is not greater than 30  $\mu\text{m}$  (0069) and the porous material has porosity of 50% (0106). Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to use the porous film substrate of Nakagawa with the thickness and porosity as taught by Nakagawa as a battery separator in the invention of Yuji, motivated by the desire to provide a suitable battery separator.

### ***Double Patenting***

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

8. Claims 1-12 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-17 and claims 1-17 of copending Application No. 11/267,404 and 10/569,417 respectively. Although the conflicting claims are not identical, they are not patentably distinct from each other because claims 1-12 of presently claimed invention encompass the same subject matter as claimed by claims 1-17 of aforementioned copending applications.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.



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***Response to Arguments***

9. Applicant's arguments with respect to claims 1-9 have been fully considered but are moot in view of the new ground(s) of rejection.

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Anish Desai whose telephone number is 571-272-6467. The examiner can normally be reached on Monday-Friday, 8:00AM-4:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Terrel Morris can be reached on 571-272-1478. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

APD



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